A Discourse Analysis of typical University CS/IS programme documentation in the U.K.

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Overview of the Research

This research reflects the author's conviction, developed over three decades as both practitioner and teacher, that the serach for the "perfect" information systems development (ISD) methodology is in fact a distraction, grounded as it is in the positivist philosophy which is the conceptual foundation of so many of our methodologies.

The research project posits the argument that, rather than misdirecting our energies in vain pursuit of the "silver bullet" we would be far more productively and effectively engaged if we tackled the issue of comprehensive and genuine participation in such projects on the part of all the stakeholders involved. It goes further by suggesting that our university curricula (in the UK), far from reducing the problem are in fact compounding it.

The Approach Taken

Substantive support for this argument is growing through an ongoing exercise in discourse analysis of the range of documentation typically produced by our universities, for example, prospectuses, student handbooks, course definitions, in-course assignments and projects and examination papers.

The discourse analysis project, as well as focusing on documentation within the computing/information systems (IS) field, subjects other disciplines to the same scrutiny and compares the outcomes.

The aims of the reseach project are to:

-        explore the validity of the initial hypothesis regarding the transfer and perpetuation of the instrumental, "engineering" mindset within the computing/IS community;

-        identify and trace those features and characteristics within our university documents and pedagogy which signal a will to accept and dis-seminate those instrumental concepts to our students;

-        develop guidelines and proposals for changes to our curricula (and, at a deeper level, to our worldviews), our publicity materials and our "image" generally which reflect a greater commitment to participation leading to more effective, user-responsive systems.

At this time work on the project has been concentrated on the first and second aims. Before entering the area of the third aim it is essential that there is established a sound, theoretically and empirically grounded foundation. In the latter category the techniques of discourse analysis have been the major vehicle for exploration of the range of documentation published by the universities.

Discourse analysis, as practised in this project, assumes that the researcher takes the stance of an "objective" analyst who is unversed in the discipline or subject matter being scrutinised. The process develops on the basis of the organic growth of a template of characteristics which are seen as typifying the attitudes behind the words.

The work to date has involved analysis of the range of documents outlined above together with transcripts of audio recordings of role-play interviews conducted by undergraduate students acting as systems analysts.

Particular emphasis has so far been given to university prospectuses and to a variety of documents relating to curricula published by the British Computer Society, the UK Academy of Information Systems and the Association for Computing Machinery.

In the analysis of the prospectuses the study has investigated the vocabulary used to project what the authors perceive as an attractive image to their prospective students. The work has involved in-depth study of the offerings of CS/IS schools and comparisons of these with other design-oriented and socio-technical disciplines.

The store of empirical data accumulated through this process has grown to a considerable size, and continues to expand. Some early thoughts on the outcomes are described in the following section.

Outcomes to Date

The Schools which advertised themselves and their courses as "Computer Science" portrayed themselves as being in the tradition of upholders and purveyors of a largely unchanging canon of knowledge and set of skills which form the core of the discipline. Themes which ran through these writings emphasised certainty and unity on the part of designers regarding aims and objectives; reference to an intellectual and practical inheritance, the adherence to which was a prerequisite for academic success and the consigning of human, organisational and social issues to the periphery of interest.

The analysis of the university prospectuses revealed these attitudes through the frequent use of words/phrases such as

> *systematic approach; formal techniques; deep principles and concepts; non-trivial use of computers; reliability, not tricks with current packages; use of mathematical ideas to develop concepts with useful applications; computer science is the basis of IT; software systems need to be properly designed in much the same way that engineering structures need careful design; balance between practical courses which teach the principal software technologies and theoretical courses which teach the crucial ideas ... understanding of fundamental principles; communicate with other experts in most areas of computing and IT*

In other computer-related fields where we might expect (or hope!) to encounter a broader, more systemic view of the object of the participants' endeavours there often remains an attitudinal legacy which can probably be traced to their roots within computer science (and the retained loyalty to their intellectual origins within the computer science field). So that Schools and courses which are overtly focused on, say, "Business Information Systems" may retain many of the themes associated with computer science and its co-thinkers in the academic "engineering" community.

For example, on the one hand we find evidence of a "new", broader, more all-embracing approach in the prospectuses under "Information Systems" with words/phrases like

> *new breed of manager; combines business skills with expertise in IT; full understanding of the business context; human and managerial issues as well as technical ones; bridge the gap between technical specialists and would-be users; the analysis of human and computerised systems*

On the other hand, in similar courses we can still find contrary evidence which seems to confirm the earlier "computer science" stance

> *learn about the fundamentals of the machines on which they will be relying for their livelihood; design and construction of quality software, CASE tools, object-oriented programming and implementation of database systems; development of business information systems using contemporary network and data management technologies*

When we look at the publicity material for courses in other, related disciplines - whose scientific/engineering pedigree is beyond question! - the contrast is quite revealing; for instance, in architecture

> *develop understanding of the design process to give the ability to evaluate the quality of ... buildings and landscapes; aims to place the art of architecture within a social and historical context; embraces disciplines from the physical and social sciences to the arts and humanities; encouraged to explore contemporary challenges in urban development*

and medecine

> *integrates medical science with clinical education; learn medical science through ... integrated, interdisciplinary modules with a strong emphasis on social and behavioural medecine*

Conclusions

What is beginning to emerge from the study is a picture of a discipline (as painted by its pedagogic champions) which sees itself firmly based in the scientific/engineering category implying, for its students, the pursuit of an established set of academic goals, following time-honoured paths and practices culminating in the achievement of widely-accepted and validated academic and professional status.

Sadly, the reality of demand for skills in the U.K. practitioner market is very often at odds with this picture. To make matters worse the information systems user community at large persists in expressing dissatisfaction with the output systems generated by people who are the product of this education/training process.

Both educators and practitioners need to reflect carefully on this unhappy situation.

This research project has, so far, established a likely source for **some** of the causes of the problem. In its subsequent phases it will investigate and propose a framework of potential ameliorations to the education/training process in U.K. universities, based on a blending of the technical and the social where the latter is much more than a token partner.